Non-payments and Barter in Ukraine's Power Sector: a Policy Challenge

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By virtue of its being a "backbone sector", the soundness of electricity sector is almost a mirror reflection of the health of the economy as a whole. Also, inasmuch as it is an essential supplier for almost every single household or enterprise, the soundness of the electricity sector is a prerequisite for the smooth operating of the rest of the economy. This policy paper is intended to illustrate policy challenges faced by Ukraine's decision-makers, while undertaking economic restructuring, using the example of Ukraine's power sector.

Introduction

In most economies, electricity is regarded as a backbone sector, as it is hard to find an economic agent that would not be its customer. By this virtue, the soundness of the electricity, or power, sector can serve to reflect the health of the economy as a whole (assuming regulation is constant, since poor regulation is a negative factor). Conversely, the soundness of the electricity sector is a prerequisite for the smooth operation of the rest of the economy.

Non-payments for electricity have lately evolved into a systemic practice in Ukraine. In policymaking, as well as in enterprise management, non-payments are frequently treated as an inevitable phenomenon anywhere. However, the scale of non-payments in Ukraine's power sector is spiraling out of control, threatening the reliability and integrity of the power system, while non-monetary settlements have acquired a life of their own.

This policy paper is intended to illustrate policy challenges faced by Ukraine's decision-makers while undertaking economic restructuring, using the example of Ukraine's power sector, which has been praised for its 'advanced' market structure. The paper is organized into four sections: (1) the 'Introduction', with background material on key definitions and a profile of Ukraine's electricity sector; (2) 'Evolution and scope' describes the history and extent of non-payments in the sector-specific and broader economic contexts; 3) 'Causes and effects' identifies key aggravating factors, as well as underlying reasons (in the author's opinion), for non-payment accumulation and briefly reviews the major repercussions for the sector and the whole economy; (4) 'Solutions' evaluates policy efforts undertaken to date and infers policy recommendations for tackling non-payments.

Terms and Definitions

For the sake of better understanding of the points made by this paper, we shall start with definitions of the key terms used throughout.

NON-PAYMENT is the failure to deliver payment in an acceptable form for provided goods or services (in our case, electricity supply or transit) within an acceptable time frame. Acceptable form of payment would customarily be understood to be cash or cash equivalent. In this case, the peculiarities of the Ukrainian economy in general, and the electricity sector in particular, give rise to other 'acceptable' forms of settlement, such as barter and veksels. An acceptable time frame of payment delivery is normally equal to 1 month—a typical arrangement for utilities. Failure to deliver payment acceptable to suppliers is recorded as arrears—an overdue account payable in the customer's books and an overdue account receivable in the supplier's books.

BARTER is frequently used in a broad sense to define all non-monetary types of settlements. In case of the electricity sector, barter is the exchange of goods and services for the supply of electricity. For example, an electric engineering enterprise supplies equipment to a power generating company (genco) in return for electricity.

In addition to traditional forms of barter, settlement mechanisms practiced in Ukraine's electricity sector often include so-called debt offsets and veksels. **OFFSETS** can be defined as settlement of payment arrears via cancellation of mutual liabilities (exploiting the effect that a liability of one party is an asset for another). The simplest and most obvious example is when only two parties are involved, e.g., a power distribution company (disco) and the government, where the former owes taxes to the latter, while the latter owes the former for electricity consumed by state budget-financed customers.

In a **VEKSEL SETTLEMENT**, a power company (energo) would accept as payment for supplied electricity a promissory note (bill of exchange, or *veksel*) issued by the customer at its par value (specified on the note, which is to be redeemed by the issuer on the maturity date). The accepting party (here, the energo) has the option to sell the veksel to a third party prior to the maturity date. The market would price such a premature veksel at a discount, thereby reflecting the time value of money as well as the creditworthiness of the issuer (who is

the ultimate source of veksel redemption). In Ukraine's electricity sector, an important modification of the veksel settlement is the transfer order mechanism, which is a payment mechanism between the Energorynok members by transferring the rights over receivables (redeemable in electricity supply).

Settlements of electricity bills in Ukraine frequently entail a complex combination of veksels, offsets, and barter; for instance, veksels are common facilitators of barter and offset schemes. Sometimes it is extremely difficult to discern between them, therefore, the collective term **NON-MONETARY SETTLEMENTS**, encompassing all three, is widely used throughout the text.

For those readers for whom Ukraine's power sector is a terra incognita, the next section provides an introduction to the sector's framework within which the problem of non-payments is to be examined.

Profile of Ukraine's power sector

The power industry of Ukraine, with over 51,000 MW of installed capacity, is ranked the second largest in Central and Eastern Europe (after Russia) and comparable to that of Italy.

Comparative profile of electricity sector

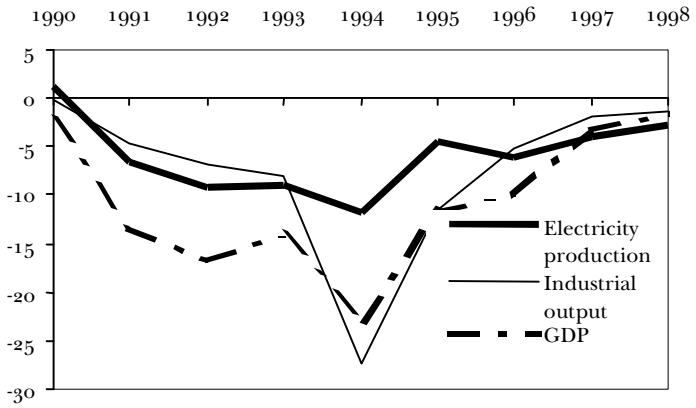
	Installed Capacity (GW)	Utilization , 1998 (%)	Generation structure	Net exports (% of generation)
Ukraine	51.5	39	47% thermal; 44% nuclear, 9% hydro	0
Russia	205.6	38	70% thermal, 18% hydro, 12% nuclear	2
Hungary	7.4	55	59% thermal, 40% nuclear, 1% hydro	-6
Poland	33.0	47	97% thermal, 3% hydro	2

Source: World Bank, UN Energy Statistics Yearbook

Ukraine's electricity generation has been declining since 1990, though the rates of contraction are slower vs. the aver-

age across the economy as a whole. In 1998, power generation volumes slipped below 172 TWh,[1] or 58% of historical peak level (in 1990). Such a rapid contraction in generation activity, driven by a combination of demand-side and supply-side factors, has translated into a noticeable increase in excess capacity margin (about 50%).

Electricity generation vs. Overall economy



Source: Derzhkomstat, Minenergo.

The weight of residential electricity consumption increased from 11% in late 1991 to 18% by early 1999, while that of industrial users contracted from 64% to 54% for the same period.

Power consumption patterns, 1997

	kWh per capita, 1996	KWh per USD of GDP, 1996)	Household share (%)	Industry share (%)	Household tariff (USD/MWh)	Industrial tariff (USD/MWh)
Ukraine	3,194	2.01	18	54	22 YE98	31 YE98
Russia	5,114	2.21	29	51	18	42-62
Hungary	3,199	1.01	34	40	63	56
Poland	3,160	1.75	18	48	72 1996	44 1996

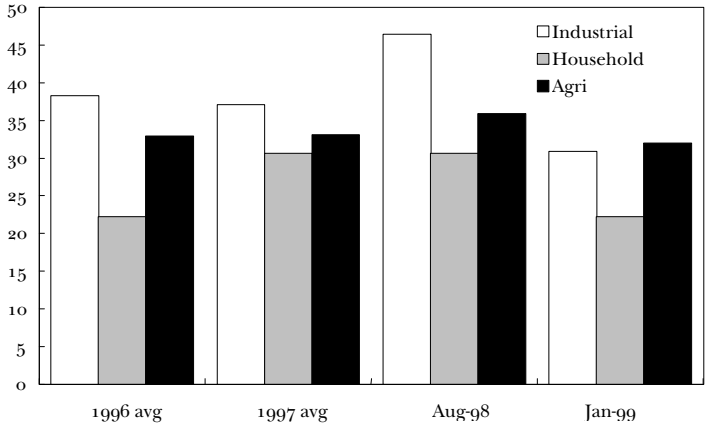
Source: World Bank, IEA, author's calculations.

[1] TWh = 1,000 GWh = 1,000,000 MWh = 1,000,000,000 KWh

This has occurred despite household tariffs being raised from 24% of industrial in 1994 (US$3.4/MWh vs. US$14/MWh) to 72% as of early 1999 (US$22.2/MWh vs. US$30.9/MWh). Again, the government has announced a 20% rise in household tariffs to be effective April 1, 1999. Though a step in the right direction, this adjustment still falls short of 100% cost recovery for household power supply.

Breakdown of retail tariffs in Ukraine

USD

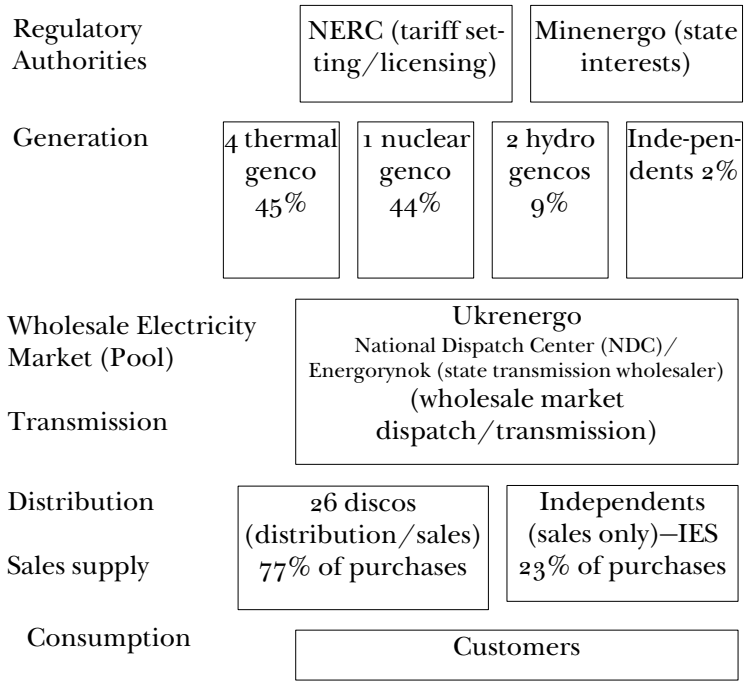


Source: Minenergo, World Bank, author's calculations.

INDUSTRY STRUCTURE/REGULATION: Being an infrastructure sector, Ukraine's electricity market is heavily regulated; its two major regulators are the National Electricity Regulatory Commission (NERC) and the Ministry of Energy of Ukraine (Minenergo). Responsibilities of the former include issuance/monitoring of operating licenses and tariff setting, while the latter is ostensibly a policymaking arm of the government in the sector. Minenergo is also vested with the authority to exercise trust management of state-owned stakes in electric utilities.

Ukraine's power industry has been formally unbundled since 1995, while its operating in Pool mode was launched in 1996. Previously, Ukraine's power sector was made up of 8 regional integrated utilities (Lvivenergo, Vinnytsiaenergo, Kyivenergo, Odesaenergo, Dniproenergo, Kharkivenergo, Krymenergo, and Donbasenergo).

Present industry structure



On the wholesale sell-side the power tariff, which is set at the hourly spot market, is made up of two components: system marginal price and capacity availability payment. The former is the highest gencos' bid accepted for each hour, while gencos' bids are met in merit order, i.e., from lowest to highest. In bidding, gencos are allowed to include only their short-run variable costs.

The wholesale tariff on the buy-side equals the wholesale sell-side tariff, adjusted downward for power supply from nuclear and hydro generators (which operate under fixed long-run tariffs) and adjusted upward for costs of dispatching and system operation. The retail tariff, in turn, is structured as the wholesale buying tariff plus low-voltage network operating cost plus administrative cost of retail supply. Retail tariffs are regulated and set by the NERC (apparently by cost-plus formula), while consumer heating tariffs are set by municipal authorities.

Privatization Status: Assets in the Ukrainian electricity sector—27 regional power distributors and 4 thermal generators—have been completely privatized. Under the current legal framework, nuclear power plants, hydro generators,

transmission, and district heating facilities are excluded from privatization.

A prerequisite for tender/public offering is completed buy-out (on privileged terms) by managers and employees, which has already been closed at all privatizable energos. The current privatization strategy is to sell discos first, with majority stakes in 7 of them already acquired by private parties. Privatization offerings of gencos, which was intended to be arranged via international tenders involving qualified international advisors, are still deadlocked.

Though privatization plans envisage significant stakes to be sold to insiders, by now most of their holdings has been channeled to outsiders (institutional or strategic investors). To date, it may be stated that almost 40% of Ukraine's electricity supply is controlled by private parties; this includes over 23% of privately controlled discos plus over 16% of IES.[2] Private generation (less than 8%) is represented only by IES (generating mostly from leased blocks) and imports (mostly from Russia) operated by private IES.

Non-payments in Ukraine's power sector have reached a critical scale, threatening the reliability and integrity of the power system, while non-monetary settlements have evolved into a systemic problem. Starting back in the early 1990s, accumulating non-payments for power bills have resulted in arrears of 1.6 bn USD or over 4% of GDP. It is troublesome that, unlike its Central European counterparts, Ukraine never succeeded in breaking the trend of deteriorating payment discipline since the start of the transition in 1992. This raises questions about the adequacy of reform policy choice and implementation.

Evolution and scope

Evolution of non-payments

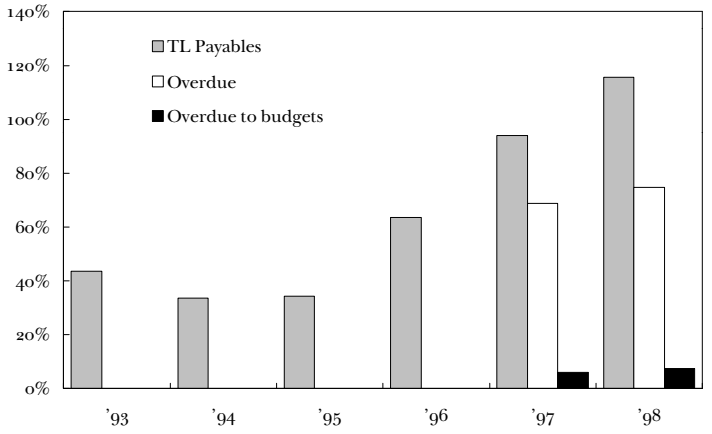
In tracing the evolution of the non-payment problem in Ukraine's power sector before 1996, the data available is not so much limited as restrictive. Analysis is further complicated by the structural break in 1996/97, when Ukraine's power sector switched to the Pool mode of operation, i.e., the vertically integrated structure was split horizontally into generation, transmission, and distribution. Nevertheless, evidence suggests that the non-payments problem emerged after the disintegration of the Soviet Union in 1991, when early attempts were made to replace administrative allocation of resources with market-oriented allocation.

Recent data suggests that accounts receivable of Ukraine's electricity sector (Minenergo enterprises) exceeded 5.4 bn UAH (equivalent to 1.6 bn USD) as of early 1999, which constitutes a drastic leap from 207m UAH (less than 200m USD) as of late 1994. If calculated as a percentage of GDP, the consumer debts increased by a full percentage point, from 3.1% as of late 1997 to about 4.1% as of late 1998.

[2] With deduction of Energoatom and other state-owned energos.

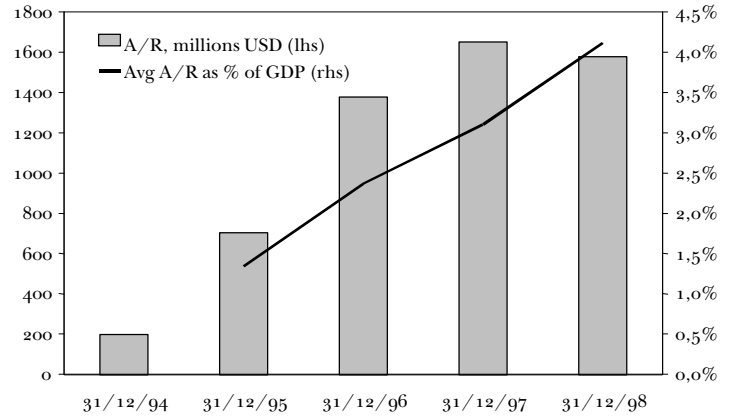
Evolution of non-payments

Averaged as % of GDP



Source: Derzhkomstat

Accumulation of non-payments in Ukraine's electricity sector



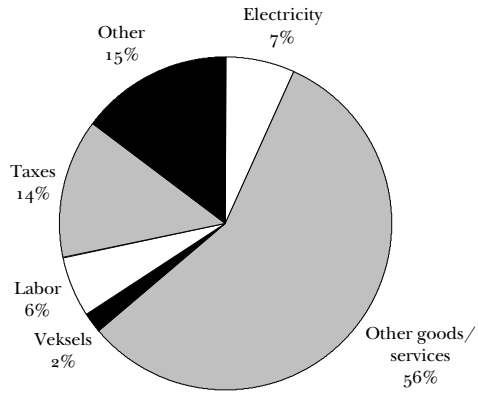
Source: Minenergo. Note: A/R=accounts receivable.

The upward trends in the sector's non-payments have been developing against the background of growing arrears across the economy, e.g., in inter-enterprise settlements, tax payments due, wage payments, principal and interest payments on bank loans. For instance, the increase of payables owed by local enterprises was from 44% of GDP in 1993 to 116% (!)

in 1998, while the reported amount of overdue payables[3] approached 75% of GDP in 1998.

Breakdown of aggregate enterprise payables

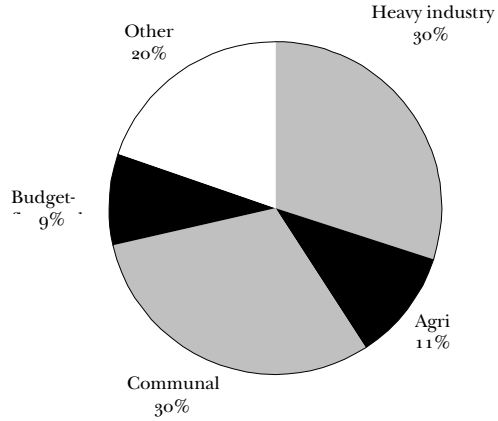
as of Jan 1 '99



Source: Derzhkomstat, author's calculations.

Breakdown of Minenergo receivables

as of Jan 1 '99



Source: Minenergo

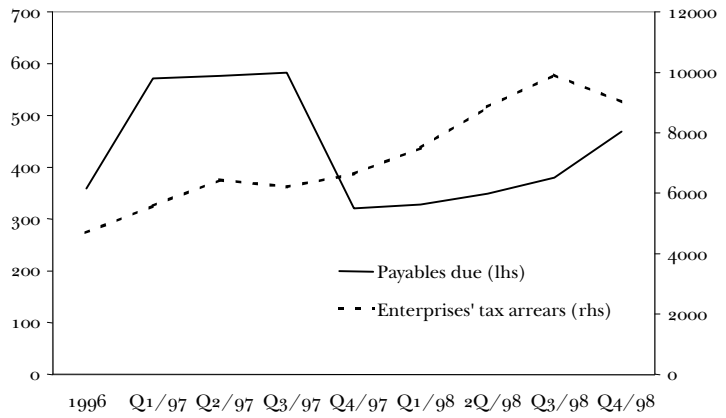
Of the payables by Ukrainian enterprises, unpaid electricity bills are estimated to account for about 7%. Heavy industry

[3] For utilities, a typical settlement timeframe is 30 days, while for other sectors (e.g., mechanical engineering) it may be as long as 90 days.

and communal sectors account for 30% each of that amount. Graphs below illustrate that electricity arrears strongly correlate with the financial performance of power consumers (here, budget-financed institutions, and households).

Payables of budgetary customers for electricity vs. Aggregate tax arrears of enterprises

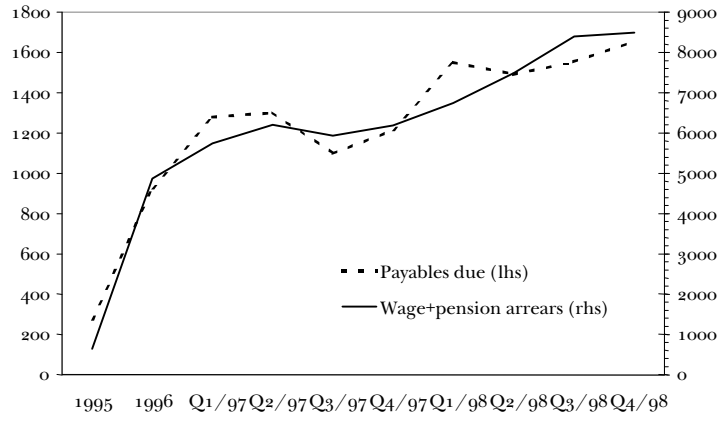
Millions UAH



Source: Minenergo, Derzhkomstat.

Communal services' payables for electricity vs. Wage/pension arrears

Millions UAH



Source: Minenergo, Ministry of Labor/Social Policy.

To better grasp the extent of Ukraine's non-payment problem, it helps to compare it with the same issue in both Russia

(common background and similar economic/reform settings) and Hungary and Poland (the region's success stories, and with a similar industry structure). It turns out that payment collection performance in Ukraine is very similar to that of Russia despite the structural differences of their power sectors. The extent of the problem faced by the electricity sectors of these economies is unheard-of for their Central European peers (including Hungary and Poland), which are more advanced in structural reforms. It is troublesome that, unlike its Central European counterparts, Ukraine never succeeded in breaking the trend of deteriorating payment discipline since the start of the transition in 1992. This raises questions about the adequacy of reform policy choices and implementation.

Collection profile of Ukraine/CEE[4] power sector

	Year of reference	TL[5] Collection (% of sales)	Cash collection (% of collection)	Avg. receivables/ GDP(%)	Receivables/ Sales (days)
Ukraine	1998	78	16	4.1	191[a]
Russia	1998	84	18	3.7[b]	405[c]
Hungary	1992	85	100	0.5[b]	54
Poland	1994	90	100	n/a	36[d]

Notes: [a] – for discos; [b] – as of late 97; [c] – for RAO UES; [d] - as of late 93.

Source: World Bank, Minenergo.

Essentially, barter payments appear to be an extension of the non-payment problem, allowing power consumption by insolvent customers. With a generally negative attitude to barter as a substitute for cash, non-monetary settlements are perceived as a necessary evil on the background of universal arrears.

Barter phenomenon

A notable feature of the non-payment problem in Ukraine is the non-monetary settlement of bills through barter, veksels, and/or offsets. In the local enterprises' books, those non-monetary payments are recorded as equivalent to cash payments. However, non-monetary payment is normally perceived as inferior to cash compensation, due to the higher transaction costs of barter settlements (need to accept, store, and re-sell the obtained goods) and lower liquidity.

[4] Central and Eastern Europe

[5] TL = total

Evaluation of Non-monetary Instruments

Common sense says that hardly any entity of the market would willingly take non-monetary payment instead of cash. However, evaluation of non-monetary settlements is not uniform across the various instruments used.

Non-monetary instruments vs. cash: *Generally, non-monetary settlements are treated as a necessary evil, with the main disadvantage being huge transaction costs which inflate operating costs and drain profits. In most cases, they result in the redistribution of profits from energos to barter intermediaries. The latter find barter mediation to be a natural business, for they can exploit their superior marketing skills, while state enterprises are used to state orders rather than marketing. There could be a more benign attitude to direct barter deals (i.e., only two parties) involving goods/services that an enterprise needs and would have to buy anyway. There should be no loss from such deals in an economic sense, provided the terms of trade are equivalent to cash-based terms.*

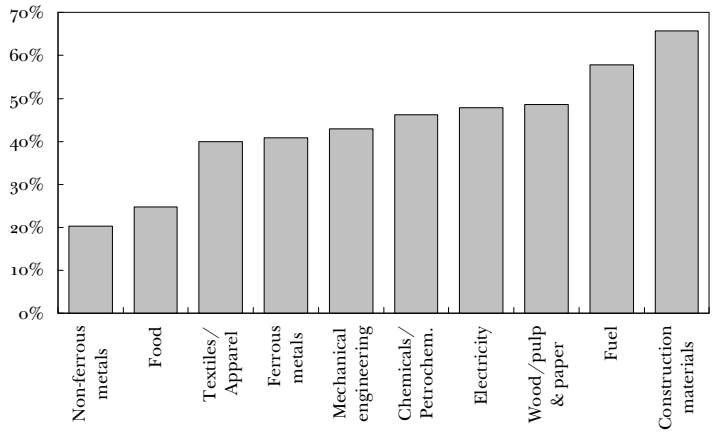
Offsets vs. cash: *Generally, tax offsets are treated as very much equivalent to cash. Because the tax authorities demand tax payments in cash, seeking to retain frequently scarce cash proceeds, enterprises should be willing to substitute offsets for payments of taxes and keep some of their cash for themselves. However, the risk is that systematic offsets encourage excessive resource consumption by budgetary organizations, which in turn means further deterioration of payment discipline and a movement away from market mechanisms. This case illustrates the conflict between individual rationality and the rationality of the system as a whole.*

Veksels vs. cash: *The evaluation of veksels versus cash depends very much on their proximity to cash money, which, in turn, is defined by the solvency of their issuer. If the issuer is ready to redeem them with cash and maintains a good credit history, veksels should be an adequate cash equivalent, priced at a minor discount. In Ukraine, the problem is that veksels are issued mostly by cash-strapped companies (e.g., gencos with cash proceeds below 5%) that have no way to meet their veksel commitments with cash; hence, the veksels are traded at fraction of their face value. Instead they are redeemed in non-monetary form and serve as facilitators of barter/offset deals.*

A common rationale for accepting non-monetary payments is that it is a second-best option vs. the prospect of not getting paid at all (akin to 'the second best' argument, given the almost universal arrears). But normally, the inability of a customer to pay with cash should signal their insolvency, due to (1) a fundamental inability to create added value; (2) mana-

gerial inability to raise cash proceeds; or (3) consumption beyond available means. Thus, the barter sale of electricity essentially exacerbates the non-payments problem, for it allows the survival of insolvent customers. This hypothesis is supported by the sectoral pattern of barter sales—sectors with highly marketable products (e.g., food and other consumer, or export-oriented, goods) pay with cash, while problematic sectors (e.g., heavy industry) live mostly on barter sales.

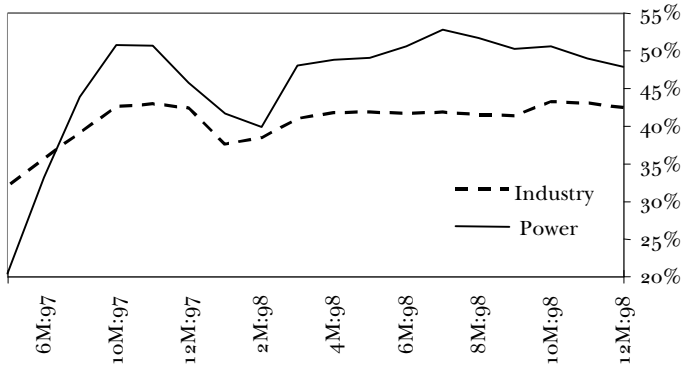
Overall barter share of sales by sector, 1998



Source: Derzhkomstat.

The limited data for 1997-98 suggests that the share of non-monetary settlements in commercial goods, electricity, and tax transactions has been increasing. Since mid-1997, the share of barter in power sector sales has more than doubled, having jumped from 20% of sales up to 50% as of late 1998.

Share of barter (as % of sales)



Source: Derzhkomstat.

However, the barter factor does not account for the whole weight of non-monetary settlements, for it misses a significant part of settlements that use offsets and veksels. This discrepancy is revealed in Minenergo's data on payment collections, which indicates that for 1998 the full weight of non-monetary settlements was 75%, not 50%.

Share of non-monetary payments in collections

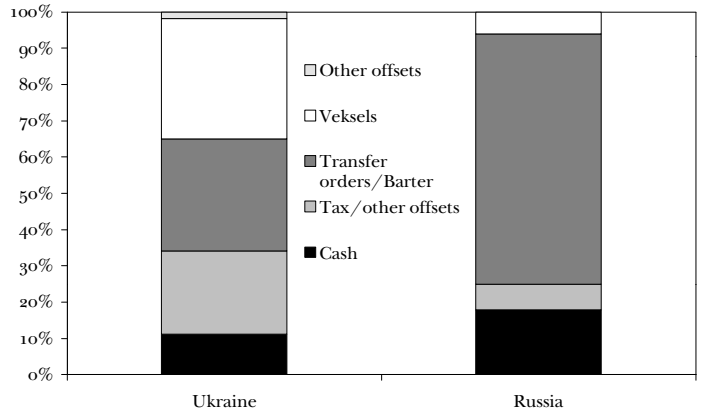
as of year end

	1996	1997	1998
DISCOS:			
TL Collections (millions UAH)	7,505	7,779	6,528
Cash (%)	23	18	25
Offsets/veksels/barter (%)	77	82	75
ENERGORYNOK:			
TL Collections (millions UAH)	2,142	7,112	6,115
Cash (%)	33	12	12
Offsets/veksels/barter (%)	67	88	88
GENCOS:			
TL Collections (millions UAH)	5,515	6,606	5,562
Cash (%)	11	9	11
Offsets/veksels/barter (%)	89	91	89

Source: Minenergo.

The comparison of Ukrainian patterns of non-monetary settlements vis-a-vis those prevailing in Russian energos is quite revealing. Although comparable in the aggregate, these patterns are different in composition.

Collection: Ukrainian gencos vs. Russian energos



Source: Minenergo, World Bank, author's calculations.
Note: 1998 data for Ukrainian gencos, Aug-98 data for Russian energos.

In Ukraine, veksel payments are used much more often than in Russia, where reliance is greater on barter settlements. The use of offsets is also more widespread in Ukraine. These variations in payment patterns may be explained by structural differences between the Ukrainian and Russian power sectors. Specifically, in the case of Ukraine, the unbundled industry structure (lack of direct genco-client relationship) makes barter payments per se excessively cumbersome. Instead, such deals are facilitated by easily transferable veksels and offsets, which are essentially barter, anyway.

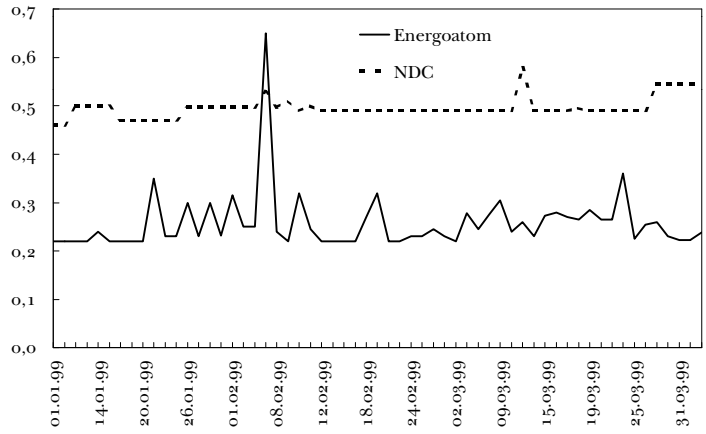
Market Pricing of Power Sector Veksels

Despite its imperfections, Ukraine's capital market provides a useful guide as to what the veksels are really worth. Based on prices at the PFTS (local abbreviation for 'over-the-counter trading system'), veksels of Ukrtelecom (cash-generating telecom monopoly), the State Treasury, and the Pension Fund are priced relatively high (15-40% discounts) owing to strong solvency position of the former and the option to offset tax/budget liabilities with the latter two.

In contrast, Energoatom's veksels are priced at almost 80% discount (!), which reflects the inability of the issuer to redeem its veksel liabilities in cash or good cash equivalent. However, there is quite a significant volatility in the price of Energoatom veksels, as the graph below illustrates (depending on specific terms of settlement schemes).

Recent price history

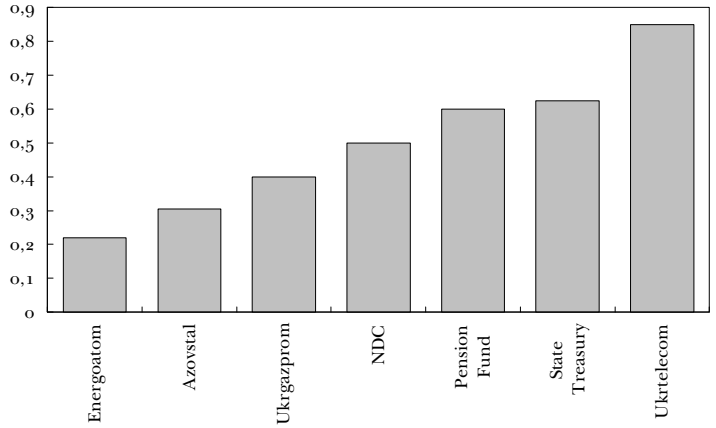
per UAH



Source: PFTS, author's calculations.

Price per hryvnia at face value

as of 6-Apr-99



Source: PFTS, author's calculations.

Causes and effects

Technically, non-payments arise from customer insolvency or their unwillingness to pay. While the former is mostly a function of management prudence[6] and soundness of general economic conditions, the latter depends on the strength of enforcement mechanisms. Both factors appear to have contributed to the exacerbation of the problem in Ukraine.

Macroeconomic setting

MACROECONOMIC MISMANAGEMENT: Difficulties in securing cash payments arose with the dismantling of the command features of the former Soviet Ukraine's economy; this occurred mostly involuntarily, as Ukrainian trading partners adjusted their relative prices to resemble those prevailing internationally. Specifically, under Soviet rule Ukraine's industry had been subsidized by low-priced energy imports (mostly from Russia) that met most of its energy consumption needs. When prices skyrocketed to world levels (from less than US$1 per ton of crude oil and 1,000 cu m of natural gas in 1991 to US$115 per ton and US$77 per 1,000 cu m,

Non-payments arise from customer insolvency or unwillingness to pay. While the former is mostly a function of management prudence and soundness of general economic conditions, the latter depends on the strength of enforcement mechanisms. The wide array of causes of poor payment collections include macroeconomic and microeconomic mismanagement, deteriorated solvency of customers, rent-seeking opportunities, and legal, regulatory, and structural impediments, the source of which is found in a lack of political commitment on behalf of the Ukrainian government to put the sector on a sound financial footing.

[6] Here, managerial prudence can affect non-payments in two ways: 1) on the supply side, management should not allow the supply of electricity to customers who do not or cannot pay; 2) on the demand side, customers should optimize their costs and/or restructure to earn enough money for their power bills.

respectively, in mid-1995), the Ukrainian economy experienced a significant shock on the supply side. The overall impact of the disintegrating former Soviet economic and trade environment was significant for Ukraine, for it had been rather exposed to internal trade in the FSU (47% of GDP in 1991).

Initially, the government tried to cushion adverse supply and demand shocks by allowing loose fiscal and monetary policies, which eventually resulted in hyperinflation that became an additional source of shocks to the economy. Its major impact was in eroding the purchasing power of residents, weakening the demand-side further, as well as in skewing preference to barter as a payment mechanism (second-best option after hard currency), exacerbated by a rapidly depreciating local currency.

Macroeconomic profile of Ukraine

	GDP CAGR[7] % '90-'98	Avg CPI (90-98)	Avg fiscal deficit (92-98) % GDP	M2, % of GDP Range 93-96	'97 GDP per capita US$	Energy imports % consumption
Ukraine	-10.5	189	7.1	32-2	976	50
Russia	-6.3	176	6.9	19-3	3,056	-54
Hungary	-0.5	23	5.4	42-51 (91-96)	4,446	47
Poland	1.8	57	3.0	32-38 (91-96)	3,509	0

Source: World Bank, EBRD, author's calculations.

In 1994 it became evident that the loose fiscal and monetary policies which intended to boost domestic activity were not sustainable nor in any way effective. The Ukrainian authorities then attempted to tighten monetary policy, as well to introduce somewhat stricter fiscal discipline. Against the background of an unrestructured economy, fiscal and monetary austerity measures have caused the build-up of arrears across the board (in the state and local budgets, payrolls and inter-enterprise bills), which evolved into a tangled web of non-payments. About this time, the 'undermonetization' of Ukraine's economy became viewed by many as a reason for the non-payment knot, and votes for looser monetary policy began to accumulate.

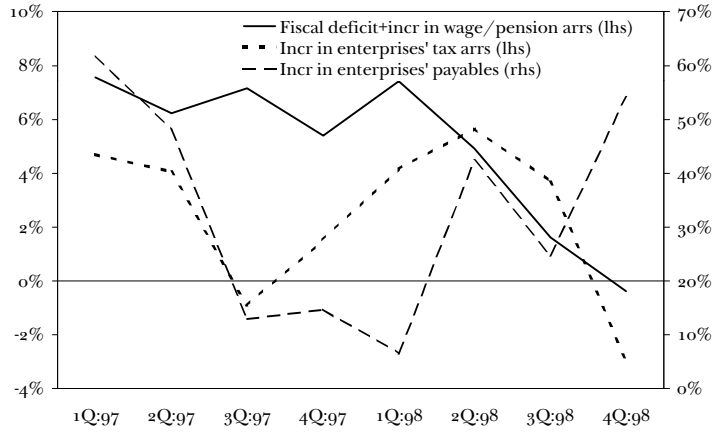
[7] CAGR = compound average growth rate

In a comparative context, Ukraine has performed poorly in macroeconomic management, and its real sector has undergone the deepest contraction vis-a-vis its CEE peers. Yet its high exposure to energy imports (frequently blamed by local policy makers) does not seem to be a good enough excuse for its dire straits (note the similar position of Hungary).

MICROECONOMIC MISMANAGEMENT: With those shocks, many domestic enterprises (especially heavy industry) faced drastically thinner markets for their products and, hence, huge over-capacity. One could anticipate downsizing via payroll cuts (in the short term) and plant shutdowns (in the longer run) as a necessary adjustment. However, government policy was reluctant to allow (forget about facilitating) cuts in labor or enterprise liquidation. Instead, major efforts have been devoted to keeping enterprises afloat without paying attention to their fundamentals, while the government, as well as company management, was and still is preoccupied with production volumes, rather than profits and efficiency.

Maneuvering between state budget and suppliers

% of GDP

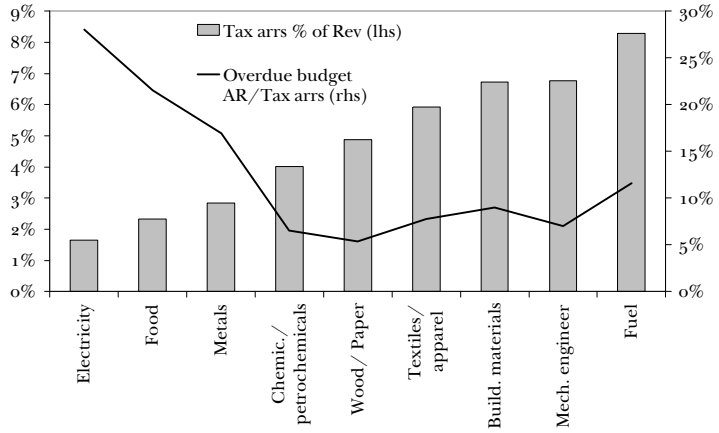


Source: Derzhkomstat, UEPLAC

While public financing (which used to be the main source of financing) has been shrinking, domestic enterprises, budgetary organizations and households have failed to adjust their consumption accordingly, owing largely to lax budget constraints. The graph above illustrates how relaxed budget constraints are for Ukrainian enterprises. Soft fiscal discipline (reflected in the high fiscal deficit during 1997) coincided with a slower rate of buildup of enterprise debts, while fiscal austerity during 1998 translated into accelerated accumula-

tion of debts, as enterprises sought to extend their budget constraints at the expense of their suppliers.

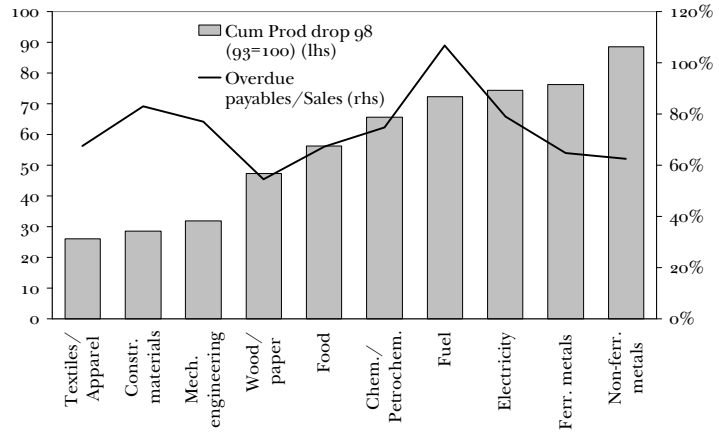
Industry vs. Budget-financed enterprise arrears



Source: Derzhkomstat

DETERIORATED ENTERPRISE SOLVENCY: While domestic accounting standards (which are not comparable with the IAS) are almost meaningless in discerning the financial soundness of enterprises, the anecdotal evidence, coupled with indirect indicators (e.g., output dynamics, wage and tax arrears), strongly suggest that the solvency of Ukrainian enterprises has markedly deteriorated.

Performance of industrial sector



Source: Derzhkomstat

At the same time, the lack of incentives for rigorous restructuring and cost-cutting efforts has caused financial distress to become a persisting feature of domestic enterprises.

DEPRESSED HOUSEHOLD DEMAND: Despite additional income contribution from shadow activities (the sources and levels of which tends to be underreported), household wealth and income positions have also drastically worsened (see graph). After the hyperinflation of 1993, real household incomes fell by over half, while their monetary assets (mostly denominated in local currency) collapsed to a fraction of their initial value.

Household income position
(real wage index and unemployment levels)

Source: Derzhkomstat, Ministry of Labor/Social Policy.

The government attempted to cushion the problem of deteriorated household living standards by granting electricity tariff privileges (25% to 100% discounts) to socially vulnerable and politically sensitive groups of residents, including the military and police, Chornobyl victims, and veterans, selecting the beneficiaries based on occupation rather than on need. The privileges granted over 1.1 million of households (about 8% of total household customers) cost the electric utilities (or government budgets if those privileges get reimbursed) about UAH6.5 mil monthly[8] (as of mid-98). That number does not take into account the subsidy to a

[8] This amount indicates the revenue shortfall to firms due to lowered tariffs. The full cost to companies is higher since current tariffs still do not cover operating costs.

larger group of agricultural households, accounting for about 6% of total electricity consumption, that are allowed a UAH10 discount on each MWh.[9]

In addition to the creating adverse side effects (such as incentives for excessive consumption, burden on the subsidizing customer groups, and motives for rent-seeking), these privileges are often not fully funded by the government since 1) legislation does not identify sources of financing for many of them, and 2) the government has a poor record of meeting its commitments due to chronic shortfalls in revenue.

Legal and regulatory setting

"ELECTRICITY IS A SPECIAL GOOD (IF ANY)": Under the Soviet economic system, the electricity sector received peculiar treatment, as it was thought to be different from a typical good or commodity (like steel, coal, etc.). Instead, electric power was regarded as an instrument of Soviet industrial and social policy. For the first time Ukrainian law on the electricity sector defined power as a tradable commodity in late November 1997, however this notion has not yet been fully internalized into practice.

Since the start of economic transition in Ukraine, this deficiency in the perception of electricity has been evident in the widespread budgeting of payments for electricity as a residual expenditure item (especially characteristic for state budget-financed organizations), which has resulted in an insufficient allocation of funds to cover 100% payment of electricity bills (or budgets with at unrealistically high assumptions of financing). Essentially, electricity retains its status of a policy instrument to date. The government arranges tariff/payment concessions, and imposes cut-off constraints for sectors/enterprises it deems crucial, seeking their recovery. A recent and very illustrative example is the governmental decision to grant the privilege of an uninterrupted power supply to agriculture.[10] Though not easily en-

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[9] On the positive side, this discount is set as a fixed nominal amount rather than a percentage. This means that as retail tariffs for households increase, the %discount will be shrinking. At the new household tariffs (UAH130/MWh urban and UAH120/MWh rural since Apr-99), the discount is less than 8%. Nevertheless, the real discount is going to be higher, since distribution costs in rural areas are higher.

[10] Presidential Decree №215/98 from March 23, 1998. This decision resulted in the subsequent replacement of the Minister of

forceable, especially at the level of private IES and privatized discos independent from Minenergo, this decision calls into doubt the government's commitment to restore the financial viability of the electricity sector.

CUT-OFF CONSTRAINTS: Downstream, power suppliers' managerial efforts to enforce strict payment discipline are impaired by legal and administrative cut-off barriers. Besides the list of 'untouchables' defined by the central government, municipalities as well as oblast administrations have their own lists of sensitive customer categories, which serve as grounds for them to intervene in power suppliers' cut-off decisions. According to the law on electricity, local authorities "have no right to intervene in the operational regulation of power consumption".[11] At the same time they are vested with an ambiguously defined authority "to participate in the development of complex plans of power supply to customers within their domains",[12] which is widely practiced.

A related problem is the attribution of liabilities which arise when a disco suspends electric supply to a delinquent customer. In case when a disruption of power supply causes damage to third parties (as would be the case with environmentally dangerous production processes, hospitals, or kindergartens, for example), the full liability of indemnity is imposed on the power supplier, although the fault may lie either with the government, which has not met its financing commitments, or with the organization/enterprise which did not fully or realistically budget for electricity costs. Overall perception of electricity as a policy instrument rather than a good or commodity makes problematic the security of ownership rights on the revenues from power sold. This is especially true for gencos[13] which stand last in the payment flow chain.

EFFECTIVENESS OF BANKRUPTCY PROCEDURE: In addition to the problems attributing liability for payment arrears, the rules for bankruptcy proceedings in Ukraine are weak and ineffective. Although the bankruptcy law is in place, it has remained void for 'politically sensitive' enterprises and sec-

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Energy as its previous incumbent failed (or was reluctant) to enforce it.

[11] Law on Electricity, Art. 10.

[12] Law on Electricity, Art. 10.

[13] The issue gets complicated by a peculiarity of electricity as a commodity – it cannot be stored in inventories.

tors (e.g. agriculture, large industrial enterprises). The lack of a working bankruptcy procedure is attributed mainly to insufficient political commitment and (related) persistence of an extensive list of state-controlled enterprises.

TARIFF REGULATION: The inflexibility of tariff regulation, resulting from the indecisiveness of the Ukrainian authorities about introducing competition, seems to be a problem, especially for discos. Specifically, discos are put at competitive disadvantage vs. IES, as tariff regulation still allows for cross-subsidization of households and agriculture (for which tariffs are set lower than the economic average cost of supply) at the expense of industry (tariffs set higher than economic cost). At the same time, IES (which are also called unregulated tariff suppliers), which are not trapped in tariff rigidities and cross-subsidization obligations, are able to offer electricity at discount tariffs. Industry insiders also claim that IES are exploiting transfer-pricing in their barter payment schemes, that allows them to offer better terms for electricity sold. Some discos have reported that IES started encroaching on their household clientele (the top cash payer in the sector) by offering lower tariffs, while compensating incurred losses with gains from transfer-pricing in barter settlements with industrials. As a result, discos are losing most solvent customers to IES, that, in effect, deteriorates their collection record further and channels available cash resources to independents (who tend to exhibit a low pass-on rate of their cash collected).

Recently (late 1998) the NERC attempted to address this problem by introducing some flexibility in tariff setting for discos: specifically, any disco can now adjust, at its own discretion, the tariff within a range of up to +/-9%. This gives discos some room for competing with IES for "good quality" clients. NERC regards this band as sufficient for a disco to outbid an IES, although it may not always be the case[14].

As of mid-1998, residential power tariffs, which are set in local currency terms, were adjusted to cover 80% of costs. However, since then the local currency has depreciated dramatically, approaching a depreciation depth of 90% vs. US dollar by April 1999. Since power generation costs are mostly hard-currency based due to the proportion (about 80%) of

[14] For instance, if an IES buys electricity with an NDC veskel (which was purchased at a 50% discount), then its cost of power supply should be significantly lower.

fuel (coal, natural gas, oil, nuclear fuel) to inputs, the cost coverage ratio has deteriorated considerably.

The inadequacy of the residential tariff undermines the financial position of power suppliers in two ways: 1) suppliers bear direct losses as tariffs fall short of incurred economic costs (especially those suppliers for whom households constitute the largest clientele); and 2) local industry, which is struggling for survival, is unfairly burdened by cross-subsidization, which again contributes to the deterioration of payment discipline (many industries regard the power tariff as illegitimately high). Though they have an inherently higher cost of supply, as of early 1999 household tariffs made up only 70% of the industrial ones. Ukraine's household tariff cost-coverage level compares favorably with that in Russia (where residential tariff is at least 20% lower), but it falls short of prevailing tariff cost-coverage in the much sounder Polish and Hungarian power sectors (the Ukrainian household tariff is roughly one-third of the tariffs in these two countries). Obviously, inadequate household tariffs have negative repercussions on the payment flow further upstream.[15]

Recently some industry insiders (mostly cash-strapped gencos) have started advocating tariff cuts conditioned on full cash payment, as they do not see possibility of collecting 100% payment at current tariff levels. The advocates of this move do not perceive the adverse impact on their financial results to be significant since: 1) their financial results are inflated anyway, as they are based mostly on non-monetary transactions; 2) non-monetary payments (even 100% at current tariff) imply the same monetary losses to gencos (due to higher transaction costs, inflated valuations of barter/veksels, etc.) as would be the case under lower tariffs with full cash payment; and 3) companies anticipate cash gains from reduced tax liabilities due to elimination of 'virtual' profits (to be elaborated below).

TAXATION, though appearing not excessive by European standards, is stated to be burdensome by enterprises which often have cash collections below 20% (hardly enough to meet tax and wage bills[16], not to mention other operating

[15] Upstream = producers – in this case, power generating (or importing) companies.

[16] It is abnormal to have wage arrears in an industry where labor costs account for no more than 5% of total operating costs.

expenses). Tax liabilities ignore the fact that frequently profits are inflated by barter and are non-monetary – they are still claimed to be paid in cash at a 30% rate of 'balance' profit.

In addition, the tax burden on utilities' customers seems to affect their cash collection. In particular, those enterprises which have tax arrears and hence are 'on *kartoteka*',[17] are prevented from paying their power bills with cash (even if they are willing to) because the tax authorities seize all their cash proceeds (effectively translates as 100% marginal tax rate) until their tax arrears are redeemed.

STRUCTURE OF THE REGULATORY FRAMEWORK: The non-payment problem is exacerbated by the current structure of the regulatory framework. Minenergo has retained its key role in the sector, which extends to the operational management of the energos, while NERC has not established itself as a fully independent authority. On the background of this regulatory dichotomy, the Minenergo's authority has been recently challenged by privatization of majority stakes in a number of discos (they even suspended reporting to the Ministry), as well as entrenchment of independents.

Regulatory profile

	Independent regulator?	Household / Industrial tariff ratio	Bankruptcy procedure	CIT [18] rate
Ukraine	Developing	0.7	Inadequate	30%
Russia	No	0.4 and less	Inadequate	35%
Hungary	No	1.1	Adequate	18%
Poland	Yes	1.6	Adequate	40%

Source: World Bank, author's calculations:

Sector structure related

SECTOR LEVEL: Not rarely, industry insiders point out that the unbundling of the power sector was an aggravating factor in the non-payment problem. Although a number of CEE countries with similar power market structures (notably Po-

[17] Special procedure applied when a firm has tax arrears: all cash proceeds to the firm are garnisheed.

[18] CIT = Corporate income tax.

land and Hungary) have not encountered Ukraine's scale of non-payments, and Russia with its integrated power sector structure faces a comparable extent of non-payments, there are a number of reasons supporting the validity of this argument.

Structural profile of Ukraine

	Competition policy (from 1 to 4+)*	Structure of power sector	Sector ownership breakdown	Share of independents
Ukraine	2	unbundled	Gencos: state-controlled grid: state-owned discos: mixed	generation: 2% supply: 16%
Russia	2+	integrated	State-controlled	generation: none supply: n/a but actually significant
Hungary	3	unbundled	gencos: mostly private discos: private grid: state-owned	Generation: n/a supply: none
Poland	3	unbundled	Gencos, grid, discos: state-owned	Generation: n/a supply: none

** ranked measure taken from the EBRD Transition Report 1998.*

Source: World Bank, EBRD Transition Report 1998, author's calculations

The unbundling of the power sector and introduction of the Pool (Energorynok) have exacerbated the problem in the following way: by being an exclusive buyer of power from gencos and the exclusive seller to discos and IES, the Pool dilutes payment responsibility of the latter (the ultimate collectors of payments) vis-a-vis the former. Under the current market scheme, gencos claim payments from Energorynok, which in turn claims payments from discos and IES. A set of problems arises in this chain:

1) Discipline of the discos in transferring collected payments to Energorynok is increasingly deteriorating with their privatization. Specifically, privatized discos are reluctant to pass on their cash collections, seeking to retain as much cash as possible while trying to substitute their cash payments due with non-monetary instruments;

2) Rules regarding fund allocation by Energorynok are neither transparent nor fair, which causes striking variation in collection performance between gencos and discos/IES, as well as among gencos.[19]

Enforcement of payment delivery from Energorynok to gencos is impossible because: a) Energorynok, being a subsidiary of Ukrenergo, which in turn is under the auspices of Minenergo, is not a legal entity and as such, its legal liability for non-payments cannot be established (it is not subject to bankruptcy proceedings); b) pooling of electricity at the Energorynok level rules out the possibility to trace delinquent buyers (i.e., discos or IES) in order to hold them liable for their payment arrears.

ENERGORYNOK VS. ENERGOMARKET: The dependent status of Energorynok seems to create a legitimacy problem for power market agents, especially private IES and privatized discos. Specifically, its subordination to Minenergo makes it essentially an administrative mechanism, and in many ways it still follows the Soviet system of power supply allocation. The absence of independent legal status and corresponding absence of any enforcement mechanisms at the disposal of Energorynok contribute to the common perception that Energorynok is not a true market instrument. This perception creates incentives to hide/retain collections downstream (especially by private discos), as well as does not motivate better cash collection.

GENERATION: A crucial issue in the structure of Ukraine's power sector is that arrangements for competition in the electricity market are virtually absent. Hypothetically, under free competition the low-cost nuclear and hydro gencos would be first to dispatch. If fully used, their capacities (17,300 MW of nuclear and hydroelectric) would generate up to 150 TWh of power (or 87% of 1998 generation), leaving the remainder for the thermal generators (34,000 MWh).

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[19] Though Energorynok allocates cash proceeds on a pro rata basis, the companies' weight can be manipulated resulting in a higher or lower cash collection.

Clearly, most thermoelectric capacities would have to be retired, even with optimistic demand growth assumptions under this scenario.

'FAIR COMPETITION' ISSUE AMONG SUPPLIERS: The issue of fair competition practices is also relevant. Seeking a secure fuel supply for Energoatom, Ukraine's nuclear power genco (which accounts for over 40% of all generation in the country), the Ukrainian government has granted this genco an IES license.[20] This has allowed the company to capture (with sanction from the government) enterprises producing 'liquid' goods that can be used as barter payment for electricity supplied by Energoatom. Such 'liquid' products, in their turn, would be used to pay the Russian TVEL, the monopolist fuel supplier for Ukraine's nuclear plants, for nuclear fuel shipments.

While Energoatom and other big players win government support, small private IES are experiencing discriminatory treatment. For instance, IES are administratively kept away from cash-paying customers (e.g., households, non-industrials). Also, the authorities (Ukrenergo) frequently (but on an ad hoc basis) interfere in the terms of IES power supply schemes, making independent suppliers worse off.

INDEPENDENT SUPPLIERS: The collection record for IES is mixed, for the character of this category of power suppliers is quite diverse and not yet stable (although the structure of this segment is rather concentrated, with a handful of players dominating).The biggest IES, accounting for the majority of non-tariff supply, is Energoatom (nuclear genco); the rest of the IES can be roughly categorized into 3 groups (by estimated market share, in descending order):

1) less than a dozen private IES which are at par with discos in terms of their supply volumes (over 500 GWh/yr), owing to their access to power imports (from Russia) and/or to operating with Energoatom electricity. Many of them also lease power generation capacities.

2) over 30 state-owned industrial enterprises with an IES license, which is used to facilitate power supply and/or to get payment for fuel supplied to power plants. In this category,

[20] To date, most gencos have an IES license, which allow them to get around the cash crunch at Energorynok by using barter supply schemes (e.g., power for fuel or equipment), and also enables them to sell power to end-users at a discount vs. wholesale tariff.

the coal mining enterprises, gas producers/suppliers, and gencos are most prominent.

3) over 100 small-scale (less than 100 GWh/yr) private IES.

Although IES are not immune from most of the problems encountered by discos, anecdotal evidence supports the idea that private IES (groups 1 and 3) do have better collection rates, probably thanks to their independent private (hence, profit maximizing) management.

PRIVATIZED DISCOS: The privatization of discos, under in the conditions of absent collection enforcement mechanisms and continued public operation of other sector players was accompanied by disincentives for discos to pass on due cash revenues. Naturally, with the privatization of majority stakes, discos aim to maximize their shareholders' value (= present value of all future earnings). As a result, on the positive side, they became more aggressive and innovative (than their state-owned counterparts) in collecting payments from their customers, by impeding non-monetary settlements where possible, applying a stricter cut-off policy (in some cases even in defiance of local and central governments), and investing in better metering and collection systems. Simultaneously, on the payables side they face a not-for-profit state-administered Energorynok (and, implicitly, its gencos), as well as national and local governments, to whom they seek to pass on the costs of non-monetary settlements and non-payments, while retaining as much cash collections as possible. For instance, such discos try to settle all of their tax liabilities using offsets (thereby keeping their cash at home) and seek to minimize cash transfers to Energorynok (and, ultimately, its gencos) by substituting non-monetary instruments. As a result, while their own (for themselves) payment collection rates have improved, those of Energorynok and, consequently, the gencos have deteriorated.

Rent-seeking incentives

The incentives for rent-seeking seem to be abundant and are concentrated in the following areas:

1. Non-monetary settlements may be encouraged (or fueled, if you prefer) by the rents they can provide to barter dealers. The source of rent is the discrepancy between the cash price and the one set in a non-monetary deal (normally, the latter is higher). Although the premium on the latter could be justified by higher transaction costs, the room for unfair gain lies in the low transparency of such deals. That very feature is

regarded as inducing the substitution of non-monetary settlements for cash settlements.

2. Frequent tax offsets arranged by the government (at the central as well as local levels) induce the deliberate accumulation of tax arrears in expectation of their being settled in a non-monetary form (thus preserving the highly sought-after cash funds). In addition, as mentioned above, enterprises may also benefit from discrete valuations applied in those offset schemes.

3. The fact that Energorynok (Ukrenergo) retains many of the soviet-style command features that rest on officials' discretion creates room for corruption. Many power market agents complain about the complicated and frequently changing procedures for non-monetary settlements, while smaller private IES suffer from power abuse and discriminatory treatment on the part of Ukrenergo officials.

4. Deteriorating public funding has drastically shrunk personal income, position measured by official salary of government while officials remain highly involved in the power sector; this increases incentives for, and likelihood of, bribetaking. There is also a concern that underpaid energo employees may collude with customers on electricity theft.

5. Until recently, non-monetary settlements had also been motivated by tax evasion, as many energos, facing chronic cash shortages, built up considerable *kartoteka* liabilities. Though that incentive is still in place, the introduction of VAT on barter (and veksel) electricity trade in late 1998 has reduced the tax evasion 'appeal' (or at least part of it) of these payment methods.

Technical issues

Cash deficits prevent power suppliers from generating the cash necessary to address their technical problems (for instance, investing in better metering devices, maintaining distribution networks, etc.); this, again, is a contributing factor to poor payment discipline. The impact of technical problems on payment collections is reflected in the growing percentage of the distribution power losses (technical as well as commercial).

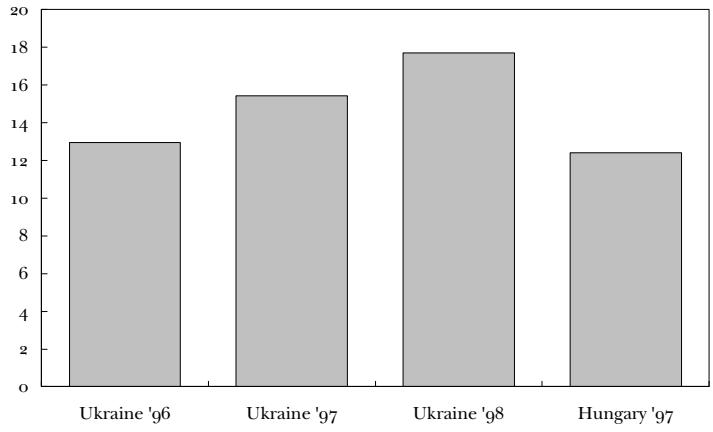
Industrial consumption is metered by discos using inherited metering devices which were designed for large power consumption levels under the assumption of full capacity utilization by industrial enterprises. However, with the collapse of

production activity of many domestic enterprises, such metering devices appear to be inadequate for proper metering of power consumption due to their low sensitivity and accuracy at low consumption volumes.

The problem of proper metering of residential customers is also acute. The drastically deteriorated income levels of most Ukrainian households provide incentives for power theft, which is possible due to technical deficiencies of electricity meters. In addition to poor metering, the payment collection system in Ukraine is grossly deficient. Specifically, (1) meters are read by the residents themselves (thereby allowing for underreporting of actual power consumption levels); and (2) there is no control over timing of payments with no specific deadlines set for payments.

Ukraine's electricity distribution losses

% of sales



Note: Data for Hungary's losses combines both technical and commercial.

Source: Minenergo, ING Barings, author's calculations.

In addition to deteriorating payment discipline and transmission/distribution networks, growing losses are also attributed to a shift in consumption patterns, whereby customer groups, like households, that consume electricity with inherently high distribution losses (due to their small scale), have gained in their consumption share at the expense of big industrial customers who are supplied with low distribution losses (due to economies of scale). In 1990, households accounted for less than 8% of power consumption, while in 1997 their share approached 18%, mostly at the expense of large industrial customers.

Financial and technical impact on the system

The direct impact of cash flow drainage from energos (discos and especially gencos) due to non-payments is a severe shortage of working capital, which translates into operating deficits. Specifically, energos (especially gencos) do not collect enough cash to meet their own essential cash-based expenses, like wages, taxes, and debt servicing (fortunately low due to low exposure to debt financing), not to mention the cash necessary for fuel/equipment purchases, maintenance, etc.

On the upstream, chronic cash deficits have translated into a lack of capacity to meet power demand. This often results in emergency demand curtailment, which is disruptive to general economic activity. At the downstream, the major impact of non-payments is the growth of technological losses due to distribution network degradation from underinvestment. The broader economic impact (in terms of price distortions, wasteful use of resources) is less evident, though hardly negligible. The non-payment problem also seems to call into doubt the sustainability of the current Energorynok pseudo-market arrangement, and deters further sector privatization.

MECHANICS OF OPERATING DEFICIT: To trace the impact of non-payments on the economics of power generation in more detail, let us refer to the income statement of a hypothetical genco (shown below), which is constructed on the following simplifying assumptions (which nevertheless do not take the case far from reality):

- only wages and CIT are regarded as cash expenses, while other operating expenses are settled in non-monetary ways;
- to highlight the problem, this hypothetical genco is taken to be a low-cost power generator, which is evident from its high profit margin (typical for a nuclear or hydroelectric genco);
- balance on extraordinary/non-operating items is zero.

Income statement for a hypothetical genco

% of net revenue

Reported		Payment levels	
Net Sales	100%		
		Total Collections	92%
Operating expenses	*58%*		
incl. Labor	*4%*	Cash collection	7%
Operating margin	42%		
Interest/extraordinary	0%		
EBT[21]	42%	Remaining cash	3%
CIT 30%	*13%*		
PAT[22]	29%	Tax arrears	10%

Source: Author's calculations, based on '97 financials of Energoatom.

[21] Earnings before taxes = 'balance profit'.

[22] Profit after tax = 'balance' profit minus tax payments.

This simple example illustrates how arrears are set in motion even under very optimistically assumed conditions. A cash-strapped energo company may have some room to maneuver in allocating its scarce cash funds between cost items, yet there is no way it can achieve a sustainable reduction of its arrears without drastic adjustments in sales and collection patterns. This example also illustrates that earnings reported by Ukrainian energos under local accounting standards are virtual, as normally a company with a sound profit margin would not have any difficulty in paying wage and tax bills. Most energos claim that 20-25% cash collection is a necessary minimum to meet their cash-based operating expenses (in the above example it is 17%). So far, many energos (mostly gencos) are reported to have wage and tax arrears are that tending to accumulate. Gencos appear to have greatest wage arrears, which has sometimes resulted in workers' strikes (thus undermining system reliability further).

This illustration also provides insight into the perverse incentive of low cash collection. Facing regulated tariffs (by Energorynok for the gencos or by NERC for the discos), electric utilities are not interested in cutting costs, for that would increase their tax liability (as discussed in the section on causes). Elements of the current taxation system such as cash-based garnisheeing of tax debts provide incentives to utilities to inflate their costs and thereby reduce their tax liabilities. That incentive also motivates their proposals to offer tariff discounts, as lower tariffs would reduce their taxable income base.

Broader economic impact

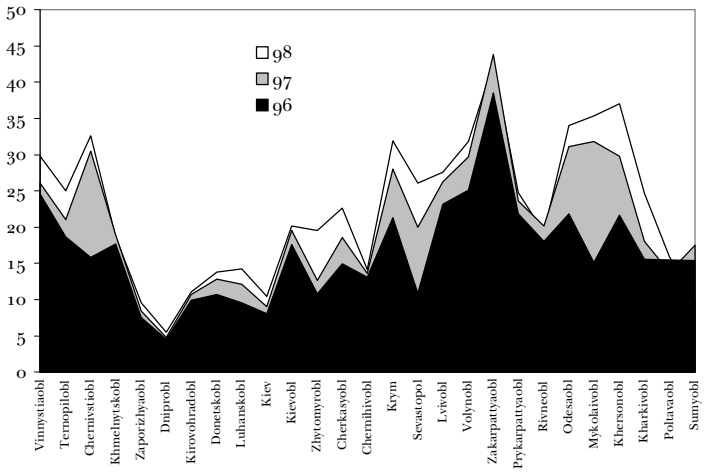
The broader economic impact of the problem stems mostly from the price distortions created by non-payments. Essentially, non-payments reduce the price of electricity and artificially soften end-user budget constraints, thereby inducing excessive consumption and encouraging inefficiency of electricity use (use of electricity per USD of GDP is twice as high in Ukraine as in Hungary). Also, acceptance of the non-payment phenomenon allows the survival of economically inefficient enterprises. More directly, the deteriorating reliability of the power supply has become increasingly disruptive for the everyday activity of enterprises and households, although its impact is not easily quantifiable.

The negative impact of barter can mostly be described in terms of price distortions and high transaction costs. Barter has also become a vehicle of income redistribution (from

state-controlled enterprises to private barter dealers) via transfer-pricing (e.g. by inflating prices for own goods), which tends to worsen energo terms of exchange (even though by itself this practice is neutral with regard to economic efficiency).

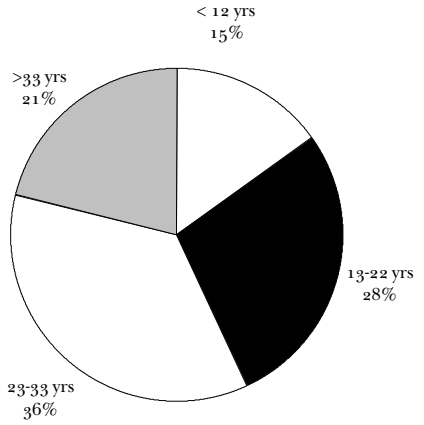
Technical distribution losses

% of sales



Source: Minenergo.

Age profile of generation capacities, 1998



Source: Minenergo.

Turning back to the example of a hypothetical genco, although reporting to be operating at healthy 29% profit margin, the company is already falling short of cash to meet its

tax liabilities. As a result, the only way our genco can undertake capital expenditures is through barter (or other non-monetary schemes). This raises two problems: 1) the company is likely to be constrained in the scale of its capital expenditures (resulting in an under-investment in refurbishment or modernization); 2) due to the limited availability of suitable barter partners, the company will be forced to look for suppliers that would agree on barter settlements rather than the optimal ones. As a result, our genco may end up with low-quality equipment that does not fully address its needs.

The impact on further reform of the sector

In the light of the unceasing escalation of non-payment problems, the sustainability of the status quo (that is, a pseudo-Energymarket with persisting governmental intervention) seems questionable, and the power sector will have to undergo changes in its 'rules of the game' quite soon.

There are two stable equilibria to which Ukraine's power market structure may gravitate – and these seem to be the two ultimate options for Ukraine's policy makers: either an integrated state-controlled structure (and here, a logical extension would be to extend state control over the rest of the economy) or a full-blown liberalization of the power market. The second equilibrium would crucially depend on the government's commitment (currently widely recognized as insufficient) to put the sector on a sound financial footing.

POTENTIAL OF PRIVATIZATION: The non-payment crisis also hinders the privatization of energos to private investors. Fundamentally, the value of an asset is defined by its ability to generate return for its owner. As most of the Ukrainian energos (especially gencos) are not in a position to generate any cash revenues (which can be distributed to shareholders as dividends), the implied value of those companies should be low. Clearly, however, the government, desperately seeking fund raising opportunities, will be reluctant to accept low bids, while prospective buyers will remain unenthusiastic. Overall, this translates to delays in the privatization of energos, which is unfortunate for privatization can potentially bring better, profit-oriented management, with aggressive and innovative collection practices.

Market Values of Ukrainian Energos as an Indicator of Power Sector Problems

Though the Ukrainian capital market is widely believed to be inadequate, it can still provide useful information. Specifically, the deteriorating state of Ukraine's power sector has been priced into the market values of local energos (gencos as well as discos). Their current prices are only a fraction of those pre-vailing for their Hungarian peers, which operate in a much sounder setting.

Company	Price 29/03/99 (USD)	Mkt cap. (million USD)	P/ Capacity, 1997 (USD /kW)	P/Unit sales, 1997 (USD /MWh)
GENCOS:				
Zakhidenergo	2.54	32.55	7	2
Donbasenergo	0.80	18.84	2	1
COMPARE (PRICES AS OF 29/09/98):				
Dunamenti (Hungary)	38.2	130.00	61	23
Matrai (Hungary)	36.8	125.00	156	29
Discos:				
Donetskoblenergo	0.32	20.84	n/a	1
Lvivoblenergo	0.12	23.20	n/a	7
Poltavaoblenergo	0.70	15.46	n/a	3
COMPARE (PRICES AS OF 29/09/98):				
Titasz (Hungary)	26.5	90.10	n/a	27
Emasz (Hungary)	25.2	78.00	n/a	16
Dedasz (Hungary)	56.6	169.80	n/a	46

Source: PFTS, given companies, ING Barings, author's calculations.

Solutions

Measures taken to date and their impact

ATTEMPTED ANTI-NON-PAYMENT MEASURES: To date, the government has addressed the non-payment problem in the

Attempted solutions by the Ukrainian authorities have not reversed the trend of accumulating payment arrears, as they failed to address the roots of the problem by not altering the incentives, and lacked consistency and coherency in implementation. Suggested general policy level and sector level solutions need to be guided by and sourced in the commitment of Ukraine's policymakers to make the local power sector financially sound, by replacing Energo<u>rynok</u> with Energo<u>market</u>. In addition, the potential of micro (utilities-level) solutions for improvement of cash collections should not be ignored. Significantly, incentives for those solutions are rooted in privatization.

power sector by issuing a series of decrees commanding minimum cash collection rates (e.g., 30% recently) and calling for suspension of power supply to delinquent customers. So far the impact of these directives has been limited (if any), for they fail to address the roots of the problem. Specifically, they do not alter non-payment incentives, and they lack consistency and coherency in implementation. The efficacy of these decrees is also being undermined by a growing number of concessions to various lobbyists.

While announcing its harsh position against delinquent customers and barter, the government contradicts itself by granting generous privileges and exemptions to such sectors as agriculture, as well as by facilitating large-scale non-monetary settlements of power bills. Besides the scheme of nuclear fuel supply to Energoatom described earlier, a recent example of the latter was Cabinet of Ministers Resolution No. 1440 dated September 15, 1998, which instituted the redemption of budgetary arrears with municipal veksels to provide fuel for thermoelectric gencos and "ensure smooth operation during the 1998/99 winter period".

Cabinet of Ministers Resolution No. 508 'On approving the financial recovery plan for Ukraine's power industry' dated April 18, 1998 – the most comprehensive document addressing the problem so far – provides a thorough review of the measures undertaken by the government. The timing was set for the period from Q2/98 to the Q2/99, so by now we can judge its effectiveness (pp. 38-41):

So far, the plan has failed to meet most of its targets due to: 1) delayed and incomplete implementation of intended measures; 2) built-in inconsistencies (major exemptions allowed); and, fundamentally, 3) failure to address underlying incentives for poor payment discipline.

ATTEMPTED ANTI-BARTER MEASURES: Aiming to curtail barter transactions, in Q4 of 1998 the government introduced 20% VAT on barter electricity deals. This measure has achieved its goal to some extent having raised the costs of barter sales of electricity. However, the reduction of barter payments has immediately translated into overall lower collection levels and a more-or-less status quo situation with cash collections (since systemic problems remained unaddressed). Facing lower collection rates and pressure from the gencos, the government altered its position by drafting a resolution which abandons VAT on barter, providing yet another indicator of economic policy inconsistency.

Financial recovery plan approved by the Ukrainian government, 18 April 1998

Measure	Expected results	Implementor/ Controller	Time frame	Evaluation of implementation to date
COST CUTTING				
1. All non-cash settlements (including offsets) are to be done through banks	Cost savings of around 100-300m UAH/yr due to reduction in barter volumes plus effects from measure 2.	Energos/ NBU[1]	Starting 1-May-98	Not followed
2. Gencos are to purchase fuel with cash resources only (remainder after wage, maintenance, and tax payments)	Cost savings of around 100-300m UAH/yr with addition of effects from measure 1.	Energos/ Minenergo, MinFin	Starting 15-May-98	Essentially not followed as cash resources are not adequate even to cover wage and tax liabilities
3. Gencos are to buy fuel with cash on competitive tender basis	Cost saving of 100m UAH/yr due to lower fuel costs	Energos/ Minenergo	Starting 1-Jun-98	Essentially not followed as virtually no cash available for fuel
4. Determine payables of discos and gencos as of 1-Jan-98, to be restructured and redeemed during 5-yr term.		Energos, Minenergo, creditor-ministries/ MinFin	Arrears to be determined and agreed by 15-May-98	Not implemented
TARIFF ADJUSTMENT				
5. Switch to market-based tariff setting, envisaging uniform household tariff throughout Ukraine	Full cost recovery of power supply by customers to ensure reliable operation of the wholesale market	Discos and other tariff suppliers/ NERC	By stages: 1-May-98, 1-Aug-98 and finish by the end of 98	Partially implemented (20% increases in household tariffs on 1-May-98 and 1-Apr-99)
6. According to the Wholesale Market Rules, determine the payments due to suppliers and generators, and order the distribution	Create a profit-making environment for companies with superior man-	NDC/ NERC	Starting 1-May-98	Essentially void due to Minenergo interventions

[1] National Bank of Ukraine

of payments according to the Market Funds Administration Procedure.	agement, while minimizing wholesale market regulation			
7. Prepare and submit draft legislation on canceling tariff privileges based on occupation, as well as establish consumption limits for privileged categories of households.	About 53m UAH savings annually	Minenergo, NERC, MinEconomy, Ministry of Labor	Starting 1-Jun-98	Prepared, however, no steps taken for further implementation.
ENFORCEMENT OF PAYMENT DISCIPLINE				
8. Tariff power suppliers to promptly suspend electricity supply to customers with arrears (except for cases stipulated by legislation). Make local administrations liable for interventions in cut-offs	Improved payment collection	Discos, Ministry of Justice	Starting 15-May-98	No consistent or complete implementation
9. Power for budgetary organizations to be supplied only within the budgeted-for amounts	Suspension of free power supply	Discos/ Minenergo, MinFin	Starting 1-May-98	Not effective by nature (even if fully implemented) as actual budgets fall short of planned.
10. Transfer the Market Funds Administration from the NDC to NERC-licensed Energorynok.	Establishment of transparent and reliable system for Pool's funds administration that amount to around 10 bn UAH/yr.	Minenergo, NERC	1-Jul-98	Delayed.
11. Enforce compulsory use of clearing accounts for all disco proceeds, as specified in the Pool's Funds Administration Procedure.	Making sure that discos pass on their collections	Minenergo, MinFin	1-Jun-98	Poor compliance (especially on behalf of privatized discos)
12. Prepare proposals (for Parliament) on the reinstatement of fines for late payments of power bills by budgetary organizations and households.	Stronger payment discipline, reduced arrears for consumed electricity	Minenergo	1-Jun-98	Done

CLEARING OF ARREARS				
13. Determine amounts and execute offsets against arrears for consumed power of budgetary organizations and state controlled enterprises using the NBU's Bank Offset Mechanism	Reduced arrears	Energos, Minenergo, MinFin, local administrations/ NBU	1-Jun-98 for budgetary, 1-Nov-98 for enterprises	The NBU's Bank Offset Mechanism is not regularly followed
14. Determine the amount of payables exceeding more than 3 months for major non-budgetary customers. Restructure this amount into marketable interest-bearing debt instruments	Accelerated clearance of non-budgetary arrears	Discos, Minenergo	1-May-98 for customers with over 1m UAH overdue 1-Aug-98, if over 0.1m UAH overdue	Delayed (but hardly very effective due to depressed and illiquid domestic financial markets)
15. Establish payment collection departments (adequately staffed) at all discos to conduct regular and vigorous legal actions against delinquent customers	Liquidation of arrears	NDC, discos, Minenergo	1-Jun-98	Implemented at privatized (on their own) and at some state-controlled discos with foreign advisor backing
16. Ensure redemption of budgetary arrears for electricity and heat (rescheduled for 5 years) which include veksels of the State Treasury and local administrations	Improved working capital for energos as well as better borrowing conditions	MinFin, Local administrations	1-Oct-98	Arrears rescheduled but implementation is below 100% (while new arrears are building up).
PRIVATIZATION				
17. Transfer state holdings in privatizable energos to winners of privatization tenders for trust management	Improved management of the energos to be translated into higher market values for state holdings	SPF[z], Minenergo	Within two months of tender sale	Inconsistent and non-transparent moves resulted in delays in energo privatization.
18. Execute tender sale of	Raising funds for	SPF, Min-	Finalize	Chronic resched-

[z] State Property Fund.

at least 25%+1 stakes in all discos against investment commitments, with option of trust management of state holdings.	state treasury as well as for the financial recovery of the sector.	Fin, Minenergo	sale by Q2/99	uling due to inflated tender terms and lack of consistent efforts (disagreements between Minenergo and SPF).
19. Execute tender sale of 4 thermal gencos against investment commitments	Raising funds for state treasury as well as for the financial recovery of the sector.	SPF, MinFin, Minenergo	Finalize sale in Q2/99	2 tenders (involving international investment banks as advisors) are halted due to disagreements over tender terms. Under current collection rates, market values of gencos are negligible.
20. Review the implementation of steps 17-19 and develop sector privatization plan for 1999	Improved effectiveness of privatization process	Financial Recovery Commission	15-Nov-98	Delayed to mid-April 99.
MANAGEMENT				
21. Control implementation progress as well as quarterly status reports to CabMin	Improved effectiveness of plan realization	Financial Recovery Commission	Starting 1-May-98	Formally done (problems with control).
22. Reporting on financial performance indicators (see table 10)	Regular monitoring of target attainment	Minenergo	On a monthly basis	Implemented.
23. Draft appeal to WB to reinstate loan for Electricity Market Development Project based on the initial performance of the Financial Recovery Plan, as well as request reallocation of the loan funds for metering and communication devices required for implementing hourly tariffs and voluntary demand curtailment.	Obtain 241m UAH for power market development	Minenergo, MinFin	1-Aug-98	Done.

Source: Cabinet of Ministers, World Bank, author's data.

The policy of local authorities on the privatization of electric utilities has also been inconsistent to date. One of the major reasons for that irregularity has been the clash of interests between the State Property Fund (SPF) and Minenergo. Both of these institutions are responsible for the privatization of energos; however, they pursue different objectives. The former is concerned with maximizing immediate cash proceeds from potential sales for the state budget, under austerity pressure. The latter seeks to maximize investments over the long run in order to finance the weighty capital needs of the sector. As a result of that conflict of interests, plans for the privatization of energos have been frequently amended, with excessive tender terms being introduced for minority stake offerings (e.g., rigid scheduling of investment commitments for ambitious capital expenditures).

The authorities suspended further sales and began to consider other options after numerous tender offerings of disco stakes failed to attract solid strategic investors during 1998. These options included transfer of controlling stakes in discos to the trust management of local administrations, and transfer of state holdings in a number of discos to the trust management of local banks (which, reportedly, have strong ties with local authorities). However, to date the implementation of those options has been reversed or is in stalemate, due to no apparent gains in cash collections, as well as opposition from Minenergo.

Among other recent initiatives, the Ukrainian authorities are struggling to impose greater administrative control over disco accounts, to ensure full passing-on of collected cash to Energorynok. They are also considering moving gencos closer to the collection process via direct genco-client (disco) contractual arrangements, which would alter the designed pool operation.

Solution proposals

Many believe that solutions to the non payment problem should be found and developed in a broader context e.g., political commitment to make the sector financially viable, achievement of overall economic recovery, industry restructuring and revival. Frequently suggested policy steps suggested at this **GENERAL POLICY LEVEL** include:

1) strict enforcement of the cut-off policy with regard to delinquent customers;

2) reduction of power tariff privileges; where privileged customer groups would remain, the financial burden of paying for such privileges should be fully born by the government;

3) payment discipline of the government itself should be maintained by prudent budget planning and control.

Perhaps it will sound banal, but at this level the solution for Ukraine lies simply in the political will and commitment of the government to restructure the domestic economy, in order to follow competitive market principles and to put the electricity sector on a solid foundation. Without the backing of structural adjustments new laws mandating higher cash collections, or tax concessions or looser monetary policy (presumably to tackle the 'undermonetization' problem) would have marginal (if any) impact on the financial state of Ukraine's power sector, and could turn things for the worse.

SECTOR LEVEL: By now it is almost obvious that the current power market structure (with the involvement of Energorynok) is neither satisfactory nor sustainable. Here, structural changes may follow two opposite paths:

1) Energorynok, which failed to develop into a real market, should be abandoned and energos should switch to the direct genco-disco (customer) supply relationships on a regional basis. This would boost cash collection at the genco level by simplifying the payment scheme and by establishing clear responsibility for the delivery of collected cash.

2) Energorynok should be refined to resemble the real market and to address its asymmetries in payment collection and distribution. Specifically, it should break away from Minenergo and get established on an independent basis, with adequate enforcement mechanisms at its disposal. It should have the status of an independent entity, with its Board elected by founding participants. Only after the Energorynok is established as an independent and self-regulating market, the Pool participants would be able to conclude meaningful agreements clearly specifying the obligations to pay for supplied electricity.

Although shifts in the sector structure (from unbundled to integrated or vice versa) appear to be significant in the redistribution of cash resources, per se they do not much affect the overall cash collection in the sector, since the customer base and its payment discipline and solvency characteristics stay the same. The same holds true for barter. Bans and restrictions on barter operations will not be effective or sus-

tainable as long as there is no framework enabling economic viability and discipline through effective bankruptcy proceedings, lifting of cut-off restrictions, etc. In turn, this demands the drastic restructuring of many enterprises.

UTILITIES LEVEL: Solution measures may include:

1. maintaining an uncompromising stance regarding accepting non-monetary payments instead of cash;

2. introducing incentives for sales personnel to increase cash collection (e.g., bonuses for cash collections above set target and/or revenue-sharing when lost (stolen) power found);

3. switching to billing for electricity by invoice;

4. upgrading metering devices to improve metering accuracy, as well as preventing misuse (i.e., electricity theft).

Micro-level solutions are important as they provide the potential for significant improvement in collection rates. The variety and vigor of implementing these microeconomic solutions rest on private enterprises' incentives to turn electric utilities into profit-making businesses. That drive and its results are among the most important benefits of sector privatization.

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